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## COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS.

U. S. DEPARTMENT OF AGRICULTURE  
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### BOYS' AND GIRLS' CLUB WORK.

## CLASSIFICATION OF FRUITS AND VEGETABLES FOR CLUB CANNING.

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[These recipes are part of the follow-up instructions in boys' and girls' club work. The complete series includes Forms NR-21, NR-22, NR-23, NR-24, NR-25, NR-26, NR-29, and NR-30.]

### FRUITS.

For convenience in canning, fruits may be classified into four distinct groups, or classes, such as soft fruits, sour berry fruits, hard fruits, and citrus fruits.

1. Soft fruits, such as strawberries, blackberries, dewberries, sweet cherries, blueberries, peaches, apricots, etc.

*Recipe for canning soft fruits.*—Can the same day fruit is picked. Grade and rinse the fruit by pouring water over it through a strainer. Cull, seed, and stem. Pack immediately in glass jars or tin cans. Add boiling hot sirup of 18 per cent density (thin). Place rubber and top in place. Partially tighten. (Cap and tip tin cans.) Sterilize in hot-water bath outfit 16 minutes; in water-seal outfit, 10 minutes; steam-pressure outfit under 5 pounds steam, 8 minutes; in aluminum pressure cooker, with 10 pounds of steam, 5 minutes. Remove. Tighten covers. Invert to cool and test joints. Wrap glass jars in paper to prevent bleaching; then store.

2. Sour berry fruits, such as currants, gooseberries, cranberries, and sour cherries.

*Recipe for canning sour berry fruits.*—Can same day picked. Stem, hull, and clean. Blanch in hot water 1 minute. Remove and dip quickly in cold water. Pack berries closely in container. Add hot sirup of 28 per cent density until full. Place rubber and cap in place. Seal partially, not tight. (Cap and tip tin cans.) Sterilize in hot-water bath outfit 16 minutes; in water-seal outfit, 12 minutes; in 5-pound steam-pressure outfit, 10 minutes; in aluminum pressure-cooker outfit under 15 pounds of steam, 5 minutes. Remove jars. Tighten covers and invert to cool and test joints. Wrap in paper and store.

3. Hard fruits, such as apples, pears, quinces, etc.

*Recipe for canning hard fruits.*—Grade, blanch 1½ minutes, and plunge quickly in cold water. Core, pit, or remove skins, if necessary. Pack whole, quartered, or sliced, as desired. Add boiling-hot sirup of from 18 to 28 per cent density (medium thin). Place rubbers and tops in position. Partially tighten. (Cap and tip tin cans.) Sterilize 20 minutes in hot-water bath outfit; 12 minutes in water-seal outfit; 8 minutes under 5 pounds steam in steam-pressure outfit; 6 minutes in aluminum pressure cooker under 15 pounds pressure. Remove jars. Tighten covers and invert to cool and test joints. Wrap glass jars in paper to prevent bleaching, and store. (See also Cir. NR-23 for complete instructions on the canning of apples; how to prevent them from becoming discolored, etc.)

4. Citrus fruits—oranges, canned whole for breakfast dishes or sliced for fruit salads. The object of canning citrus fruits is, first, to save the surplus and by-products; second, to furnish wholesome fruits at reasonable cost to more of our people; third, to help the producer to transform by-products into net profits.

*Recipe for canning whole oranges.*—Select windfall or packing-plant culls. Use no unsound or decayed fruit. Remove skins and white fiber on surface. Blanch fruit in boiling water 1½ minutes. Dip in cold water quickly. Pack containers full. Add boiling-hot sirup of about 18 or 20 per cent density. Place rubber and cap in position. Partially seal, not tight. (Cap and tip tin cans.) Sterilize 12 minutes in hot-water bath outfit; 8 minutes in water-seal outfit; 6 minutes in steam-pressure outfit under 5 pounds of steam; 4 minutes in aluminum pressure-cooker outfit under 15 pounds of steam. Remove jars. Tighten covers. Invert to cool and test joints. Wrap glass jars with paper to prevent bleaching, and store.

*Recipe for canning sliced oranges for salad purposes.*—The oranges may be divided into their natural sections or sliced with a knife. Pack jar or container full. Pour over product hot sirup of 18 per cent density. Place rubber and cap in position. Partially seal, not tight. (Cap and tip tin cans.) Sterilize 10 minutes in hot-water bath outfit; 6 minutes in water-seal outfit; 5 minutes in steam-pressure outfit with 5 pounds steam; 4 minutes in aluminum pressure-cooker outfit under 10 pounds steam. Remove jars. Tighten covers. Invert to cool and test the joints. Wrap jars with paper to prevent bleaching, and store. (Save the white fiber or inner portion of orange peeling for making "pectin," to be used in "jelly making.")

## VEGETABLES.

For convenience in the discussion of canning recipes and methods of procedure, we divide vegetables into five classes.

## 1. Vegetable greens, both wild and cultivated.

*Recipe for canning vegetable greens.*—Prepare and can the day picked. Sort and clean. Blanch in a vessel with a little water under false bottom or in a regular steamer, 15 to 20 minutes. Remove. Plunge quickly into cold water. Cut in convenient lengths. Pack tight in jar or container and season to taste; add a little chipped beef, olive oil, etc. Add hot water to fill crevices, and a level teaspoonful of salt to each quart. If using glass jars place rubber and top in position, partially seal; if using tin cans, cap and tip completely. Sterilize 90 minutes in hot-water bath outfit; 80 minutes in water-seal; 60 minutes in steam-pressure outfit under 5 pounds of steam; 40 minutes in aluminum pressure-cooker outfit at 15 pounds of steam. Remove from canner. Tighten covers. Invert to cool and test joints. Wrap in paper to prevent bleaching and store.

## EDIBLE CULTIVATED GREENS.

Swiss chard.	Spinach.
Kale.	Beet tops.
Chinese cabbage leaves.	Cultivated dandelion.
Upland cress.	Dasheen sprouts.
French endive.	Native mustard.
Cabbage sprouts.	Russian mustard.
Turnip tops.	Collards.
New Zealand spinach.	Rape.
Asparagus.	

## EDIBLE WILD GREENS.

Pepper cress.	Dandelion.
Lamb's-quarter.	Marsh marigold.
Sour dock.	Wild mustard.
Smartweed sprouts.	Milkweed (tender sprouts and
Purslane or "pusley."	young leaves).
Pokeweed.	

The following table for spinach will illustrate approximately what are the constituent parts of vegetable greens:

	Per cent.
Water content.....	92.3
Protein.....	2.1
Fat.....	.3
Carbohydrates.....	3.2
Mineral matter or ash.....	2.1

## CABBAGE, BRUSSELS SPROUTS, AND CAULIFLOWER.

The recipe for canning these vegetables is practically the same as for the above-named vegetable greens, and the same instructions may be followed.

Experience alone will teach the slight variations necessary in amount of time required for blanching, amount of seasoning necessary for the various vegetable greens, etc.

## 2. Root and tuber vegetables, such as carrots, parsnips, beets, turnips, sweet potatoes, etc.

*Recipe for canning root and tuber vegetables.*—Grade for size, color, and degree of ripeness. Wash thoroughly. Use vegetable brush. Scald in boiling hot water sufficiently to loosen skin. Plunge quickly in cold water. Scrape or pare to remove skin. Pack whole or cut in sections or cubes, as required by the home or market standard. Add boiling hot water and one level teaspoonful of salt to the quart. Place rubbers and tops in position. Partially seal, but not tight. (Cap and tip tin cans.) Sterilize 90 minutes in hot-water bath outfit; 75 minutes in water-seal outfit; 60 minutes in steam-pressure outfit under 5 pounds of steam; 35 minutes in aluminum pressure cooker under 20 pounds of steam.



### 3. Special vegetables. Tomatoes and corn.

*Recipe for canning tomatoes.*—Grade for size, ripeness, and color. Scald in hot water enough to loosen skins. Plunge quickly in cold water. Remove. Core and skin. Pack whole. Fill container with whole tomatoes only. Add one level teaspoonful of salt to each quart. Place rubber and cap in position. Partially seal, but not tight. (Cap and tip tin cans.) Sterilize 22 minutes in hot-water bath outfit; 18 minutes in water-seal outfit; 15 minutes in steam-pressure outfit under 5 pounds steam; 10 minutes in aluminum pressure cooker under 20 pounds steam. Remove jars. Tighten covers. Invert to cool and test joints. Wrap jars in paper and store.

*Recipe for canning sweet corn on the cob.*—Can corn the same day picked. Remove husks, silks, and grade for size. Blanch on the cob in boiling water 5 to 15 minutes. Plunge quickly in cold water. Pack ears, alternating butts and tips, in half-gallon glass jars or gallon tin cans. Pour over boiling hot water and add 2 level teaspoonsful of salt to each gallon. Place rubbers and tops in position. Seal partially but not tight. (Cap and tip tin cans.) Sterilize in hot-water bath outfit 180 minutes, one period; 90 minutes in water-seal outfit; 60 minutes in steam-pressure outfit under 5 pounds steam; 35 minutes in aluminum pressure cooker under 20 pounds steam. Remove jars. Tighten covers. Invert to cool and test joints. Wrap glass jars with paper and store.

NOTE.—When sweet corn is taken from jar or tin can for table use, remove ears as soon as jar or can is opened. Heat corn, slightly buttered, in steamer. Do not allow ears to stand in water or to be boiled in water the second time.

*Recipe for canning sweet corn cut from cob.*—Can the same day as picked. Remove husks and silks. Blanch on the cob in boiling hot water 5 to 15 minutes. Plunge quickly in cold water. Cut the corn from the cob with a thin, sharp-bladed knife. Pack corn in jar tightly until full. Add one level teaspoonful of salt to each quart and sufficient hot water to fill. Place rubber and top in position; seal partially but not tight. (Cap and tip tin cans.) Sterilize 180 minutes in hot-water bath outfit; 90 minutes in water-seal outfit; 60 minutes in steam-pressure outfit under 5 pounds of steam; 35 minutes in aluminum pressure cooker under 20 pounds of steam. Remove jars. Tighten covers. Invert to cool and test joints. Wrap with paper and store.

### 4. Other vegetables, such as Lima beans, string beans, peas, okra, etc.

*Recipe for canning.*—Can same day vegetables are picked. Cull, string, and grade. Blanch in boiling hot water for 2 to 5 minutes. Remove and plunge quickly in cold water. Pack in container until full. Add boiling hot water to fill crevices. Add one level teaspoonful of salt to each quart. Place rubbers and tops in position. Partially seal, but not tight. (Cap and tip tin cans.) Sterilize in hot-water bath outfit one period of 120 minutes; 90 minutes in water-seal outfit; 60 minutes in steam-pressure outfit under 5 pounds steam; 40 minutes in aluminum pressure cooker under 20 pounds of steam. Remove jars. Tighten covers and invert to cool. Wrap jars in paper and store.

### 5. Pumpkin and squash.

*Recipe for canning pie filling.*—Cut up into convenient sections. Core and remove skins. Cook for 30 minutes to reduce to pulp. Pack in glass jars or tin cans. Add 1 cup of sugar and 1 teaspoonful of salt to each quart of pulp. Place rubber and top in position. Partially seal, but not tight. Sterilize 60 minutes in hot-water bath outfit; 50 minutes in water-seal outfit; 40 minutes in steam-pressure outfit under 5 pounds of steam; 30 minutes in aluminum pressure cooker under 20 pounds of steam. Remove. Tighten covers. Invert to cool and test joints. Wrap in paper and store.

*Recipe for canning for special dishes (fried, creamed, baked).*—Cut pumpkin or squash into small, uniform size cubes. Blanch in boiling water for 10 minutes. Plunge quickly in cold water. Pack in jar until full. Add boiling hot water and 1 level teaspoonful of salt to the quart. Place rubbers and caps in position, but not tight. Sterilize 60 minutes in hot-water bath outfit; 45 minutes in water-seal outfit; 35 minutes in steam-pressure outfit under 5 pounds steam; 25 minutes in aluminum pressure cooker under 15 pounds of steam.

#### SCALDING, BLANCHING, AND COLD DIPPING.

These three terms, and your proper understanding of them, are very important. The question is often asked, "Is it not necessary to use the exhaust period in the canning of all fruits and vegetables?" In answer to this, we would say, "No; provided you blanch and cold dip your vegetable products before you pack." The chief object of an exhaust period is to modify and eliminate the objectionable acids and acrid flavors of a vegetable before the pack is finally sealed. The blanching period takes care of this matter. The combination of the blanching and cold dipping of all vegetables are the two factors which make it unnecessary to use the intermittent or fractional sterilization method, which is given in so many of the printed canning instructions.

When a food product has been blanched in boiling hot water or live steam, remove quickly from this and plunge immediately into cold water. The influence of this method upon bacteria, spores, and molds is very effectual. When this is followed by a single period of sterilization, we contend that the success of canning is just as sure as though three periods for three successive days were used, and the interesting part of it is that the product by this method is much better and not overcooked. It is more true to nature in color, flavor, and texture, and more natural in appearance.

Here is another question frequently asked: "What is the difference between scalding and blanching?" These are canning terms and are not used interchangeably. It is true that both refer to the preliminary treatment or heating of the product, but they are different in two things: The object of scalding is chiefly to remove skins, and incidentally to take the place of the exhaust period in the canning process; blanching is a term used to indicate a much longer period of preliminary cooking, and its objects are chiefly to eliminate excessive and objectionable acids and acrid flavors, to make it unnecessary to use the exhaust period or practice the intermittent method of canning, to reduce the bulk of vegetables, such as greens, cabbage, and other products of great bulk; and to give the "double shock" treatment to all products before final cooking.

*Scalding.*—Three important reasons for scalding fruits and vegetables are as follows:

1. To loosen the skins.
2. To eliminate objectionable acids and acrid flavors.
3. To start the flow of the coloring matter, which is later arrested or coagulated by the cold dip.

*Blanching.*—Three reasons for blanching are as follows.

1. To eliminate objectionable acids and acrid flavors.
2. To reduce the bulk of vegetable greens.
3. To make it unnecessary to use the exhaust period and intermittent process.

*Cold dipping.*—Three reasons for using the cold dip in canning are:

1. To harden the pulp under the skin and thus permit the removal of the skin without injury to the pulp.
2. To coagulate the coloring matter and make it harder to dissolve during the sterilization period.
3. To make it easier to handle the products in packing.

#### USE OF PRESERVATIVES OR CANNING COMPOUNDS.

A great many people have been misled to believe, through advertising matter, that it is both safe and practicable to use canning compounds for the preserving of vegetables which have proved hard to keep under the commonly known methods of canning. By following the directions given in these instructions, by careful blanching and cold dipping all products before packing, followed by a thorough sterilization during the one period, it will be entirely unnecessary to use canning compounds. So the first argument against the use of canning compounds is that it is unnecessary, as it is possible to sterilize any fruit or vegetable by this cold-pack, single-period method of canning, without the use of a compound. The second argument against it is that many of the canning compounds are positively harmful to health. Some of them contain as high as 95 per cent of boric acid. Others contain compounds which have preserving qualities and which are not definitely known to be detrimental to health, but since it is an unnecessary expense, very few people will care to experiment with them. A third argument is the important one that many States and the National Government have pure-food laws which forbid or restrict the use of such preservatives.

#### CANNING SOUPS AND PUREES.

It is possible to follow the same method given in the recipes for general fruits and vegetables, to can all kinds of combinations for soups, or the concentrated purees, so as to have them ready for immediate use at meal time. A special set of recipes for the canning of soups, soup



stock, etc., can be secured by making application to the Office of Extension Work in the Northern and Western States, United States Department of Agriculture, Washington, D. C.

### CANNING FRUIT JUICES.

In order to can fruit juices, the first important thing to provide is a fruit press, cider mill, or some kind of a contrivance or device which will make it easy and practicable to press the juice from the fruit.

In most cases the canning of fruit juices or sterilization can be accomplished in very much the same way as the canning of the fruit itself, except in preliminary steps and in the methods of rinsing, scalding, and peeling the fruit before pressing and in a slight difference in the amount of time required. Fruit juices as a rule will not stand as much cooking or as high a temperature during the sterilization period without the danger of destroying the natural fruit flavor.

Address the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C., for further instructions on fruit juices.

### STANDARDIZING CANNED PRODUCTS.

One of the most important things in connection with the business of home canning is the matter of properly standardizing the products and maintaining this uniform standard from year to year. It will be necessary to secure from the Bureau of Chemistry, as well as from your State office, the instructions governing the State and Federal Pure Food and Drug Act requirements as to measurements, honest pack, weight, purity of product, required printing upon the label, use of trade-marks, etc.

When you have determined these things, then the selection and use of a trade-mark is of considerable importance in the marketing of the product. In the selection of glass jars or tin cans for special products, it is of great importance to the success of the individual enterprise to choose a type of jar or can somewhat different from those commonly found upon the market or used by the commercial canners. Yours should show the evidence of the "home grown and canned products." The appearance of the product through the glass, or the design and artistic make-up of the label, will add much to the value of the product. In the past, the greatest lack, perhaps, in connection with farm and home management has been along the line of standardizing the home-grown products, maintaining the standard, and building up a reputation, getting recognition for trade-marks that represent products of definite standard.

### MARKETING CANNED PRODUCTS.

Club members who contemplate developing, in connection with the club, activities of the farm, garden, or orchard, and the sale of the products on a commercial basis, will need to take into account all of the present-day phases of marketing. This includes the proper grading of products, so as to make it possible to label these products and submit to the public an honest pack. The securing of a market for the product is a business proposition and should be taken up in a businesslike way, with the idea that every pack of canned goods sold should bring future sales.

It is important to consider storage facilities. A very profitable investment on the average farm would be a storeroom, or, better, a cold-storage room, where a definite temperature can be maintained and where both fresh and canned products may be stored conveniently for a considerable length of time.

One of the chief merits of canned goods is that it is not necessary to find a market for them as soon as packed. They should be kept in storage until the market is favorable.

In the matter of shipping canned goods to the market great care should be exercised, and when possible small shipments by parcel post, express, or freight should be tried out in comparison with large shipments, to find the comparative cost of shipping the goods. Choose the less expensive and most efficient method.

As a rule it is quite profitable to cater to a special trade of the well-to-do people, the best hotels, restaurants, and dining-car service of the immediate community. The trade should be consulted very carefully before the canning season, with a view to proper selection, size of packs, and grades of products to be prepared, and in many instances by consulting hotel cooks and hotel managers it will be possible to prepare products especially for them and in a way best suited to their purposes. Address the Office of Markets and Rural Organization, United States Department of Agriculture, Washington, D. C., for further information on problems of marketing.

#### EQUIPMENT FOR HOME CANNING.

When taking up the work on a small scale, it is entirely possible to arrange for successful home canning by using only such equipment as the farm and home may easily provide, such as a wash boiler, galvanized vat, washtub, or other vessel with a well-fitting top, which can be easily transformed into a home canner by making a false bottom with lifting handles. These homemade outfits should be classified under the heading "Hot-water bath outfits." A thermometer, paring and coring knives, wiping cloths, a convenient table for work, plenty of fresh, clean water near at hand, and a watch or clock in a convenient place, where you can check the time as per schedule, will also be needed. If you are using tin cans, you will need soldering flux, lead, sal ammoniac, a soft brick, capping iron, and tipping steel.

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